



## Arsenic Sensor: New Technology Challenge - Stage 1

**When: Planned Launch Fall 2016**

**Problem Statement:** Measuring arsenic in the environment and drinking water treatment plants is important for protecting human health. Nearly all U.S. public drinking water systems are required to measure arsenic concentrations for compliance by periodically taking water samples to a laboratory for rigorous analysis.<sup>1</sup> But monitoring arsenic for water treatment operations on a more continuous, routine basis can improve operational efficiency by readily identifying changes in process performance. Current barriers for implementing on-site arsenic monitoring include: cost, method ease of use, time, hazardous waste generation and method performance. When samples are sent to a laboratory for analysis, results are not available for days to weeks after sample collection. Improvements to on-site measuring capabilities would improve arsenic monitoring and provide a decision-making tool for water resource managers and treatment plants.

**Brief description of the potential impact from a successful solution to this problem:** Improved methods to measure arsenic in water would enhance the ability of resource managers, water system developers, well owners, and private citizens to manage water quality and improve water treatment operations to expand usable water supplies. Utility operators with access to low-cost, continuous monitoring data from online analyzers, rapid on-site field test kits, or other methods could make timely treatment decisions, save time, potentially reduce operating costs, and improve drinking water quality. Improved monitoring technology would also benefit other environmental fields, such as wastewater treatment, contaminated site remediation, and scientific research.

**Prize Competition Scope:** Stage 1 of the Arsenic Sensor Prize Competition is seeking concepts for how to rapidly, accurately, and cost-effectively measure arsenic in water that improve upon existing methods. Stage 1 is scheduled to launch in Fall 2016 and plans to have up to 4 winners sharing a prize purse of \$40,000. Responses will be judged, and winners will receive cash prizes. Depending on the results of the first phase, a second phase, focused on prototype development, may be launched in 2017. For Stage 2, which would be open to everyone, not just winners of the first phase, participants would be invited to submit working arsenic measuring prototypes for evaluation under field and laboratory conditions. The prize purse for Stage 2 is anticipated to be significantly larger than Stage 1.

For Stage 2 of the competition, Reclamation also plans to invite industry, non-profit organizations, and venture capital representatives to participate as partners and/or official judges to encourage potential commercialization with competition participants.

(1) U.S. Environmental Protection Agency. *Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide*; EPA 816-F-01-004; U.S. Environmental Protection Agency, 2001.

**Collaborators:**

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